

#9



OIQE

## RAW SEQUENCE LISTING

DATE: 02/22/2002

PATENT APPLICATION: US/09/884,211A

TIME: 11:41:30

Input Set : A:\PC10743A.app

Output Set: N:\CRF3\02222002\I884211A.raw

ENTERED

3 <110> APPLICANT: Alan et, al.  
 5 <120> TITLE OF INVENTION: NOVEL MELANOCORTIN-4 RECEPTOR SEQUENCES AND  
 6 SCREENING ASSAYS TO IDENTIFY COMPOUNDS USEFUL  
 7 IN REGULATING ANIMAL APPETITE AND METABOLIC RATE  
 9 <130> FILE REFERENCE: PC10743A  
 C--> 11 <140> CURRENT APPLICATION NUMBER: US/09/884,211A  
 12 <141> CURRENT FILING DATE: 2000-06-26  
 14 <150> PRIOR APPLICATION NUMBER: 60/213,909  
 15 <151> PRIOR FILING DATE: 2000-06-26  
 17 <160> NUMBER OF SEQ ID NOS: 6  
 19 <170> SOFTWARE: PatentIn Ver. 2.1  
 21 <210> SEQ ID NO: 1  
 22 <211> LENGTH: 1708  
 23 <212> TYPE: DNA  
 24 <213> ORGANISM: Feline MC4R Nucleotide Sequence  
 26 <400> SEQUENCE: 1  
 27 cataaaatca gcagcagcta ctaaacactca aagcaatgct tcaggttggg aactaatacc 60  
 28 tcagaggcag ctggtgtgaa catgcaaaca cggattcagc tcccagtggc acagcagcca 120  
 29 ctaggaaaat tattttgaaa agacctgact gaatgcctca ggctaaagtt aaggtggaag 180  
 30 ggaggacaga aaagcaaaga gcagactcct tcaactgaga atgagtattt cagaagccta 240  
 31 agattttaca atgaagggtga tcagagccgt tcctgggaga cagtaaaaac tccatttcca 300  
 32 gcctgggagc acgtgacatt tactcacaac aggcattgcca atttcagcct cagaactttc 360  
 33 gggcagacaa aggcgtggag aaaaacactg aggcacactg acccgagaga tcgaatcaat 420  
 34 tccgagggga tctgaatcca ctggtgcagg atgaactcca ctcatcacca tggaatgcac 480  
 35 acttctctcc acttctggaa ccgcagcacc tacggaccgc acagcaatgc cagtgaagtc 540  
 36 cttggaaaag gctactctga tggagggtgt tatgagcaac tttttgtctc ccctgaggtg 600  
 37 tttgtgactc tgggtgtcat cagcttggtg gagaatattc tgggtgattgt ggcaatagcc 660  
 38 aagaacaaaa acctgcattc gcccatgtac tttttcatct gcagcctggc tgtggctgat 720  
 39 atgttggtga gcgtgtcaaa cggatccgaa accattgtca tcacctatt aaacagtaca 780  
 40 gatacggacg cgcagagttt caccgtgaat attgataatg tcattgactc ggtgatctgt 840  
 41 agctccttgc ttgcacgat ttgcagcctg ctctcaattg cagtggacag gtactttact 900  
 42 atctttttatg ctctccagta ccataacatc atgacggtca ggcgggttg gatcatcata 960  
 43 agttgtatct gggcagcttg caccggtttcg ggcgttttgt tcatcatcta ctacagacgc 1020  
 44 agtgcgtgca tcatctgcct catcaccatg ttcttcacca tgctggctct catggcctct 1080  
 45 ctctatgtcc acatgttcc catggccaga ctgcacatta agagaattgc tgtcctccc 1140  
 46 ggcactggca ccatccgcca aggggccaac atgaagggtg caattaccct gaccatactg 1200  
 47 attgggtct tttgtgtctg ctgggcccgc ttcttctctc acttaattatt ctacatctct 1260  
 48 tgtcccaga atccttactg tgtgtgcttc atgtctcact ttaacctgta tctcactg 1320  
 49 atcatgtgta attccatcat cgaccctcta atttatgcac tccggagcca agaactaagg 1380  
 50 aaaaccttca aagagatcat ctgttgctat cctctaggcg gcctctgtga tttgtctagc 1440  
 51 agataactaac tgtgcagata gaaacgtgca taagagactt cttcattctt acagaaccgg 1500  
 52 aacattgtgc tttgatgacc cttttctcct ctgtgtaagg catgggttga gactatctgt 1560  
 53 tgtataaatt taagttcatg actttttttt ggaatggaaa caatgcccg tctctgtaca 1620

## RAW SEQUENCE LISTING

DATE: 02/22/2002

PATENT APPLICATION: US/09/884,211A

TIME: 11:41:30

Input Set : A:\PC10743A.app

Output Set: N:\CRF3\02222002\I884211A.raw

```

54 ttctaatgt cttgctactt ttggctgta caatgttaat ccatattata ggttgtaggc 1680
55 actatgaatg tataaaaaaa aaaaaaaa 1708
58 <210> SEQ ID NO: 2
59 <211> LENGTH: 1985
60 <212> TYPE: DNA
61 <213> ORGANISM: Canine MC4R Nucleotide Sequence
63 <400> SEQUENCE: 2
64 ctaagaccgt ggggaggcag ctgatgcgaa catgtgcacg cagattcagc tcttggtggc 60
65 tcggcgga ctcggagaat tacttgcaac agacctact gaatgcocct gactaaagtt 120
66 aaggtgggag tgaggacaaa aaaaaaaaag aaaaagaaaa aagaaaaaaa gaaaaaaaag 180
67 aaaaagcaaa gagcagactc ttggaactaa gaatgagcat ttcagaaatc gaagatgtta 240
68 cagtgaaggt gatcggagct gtacctggaa gacagtaaga gctccactgc cagccttttg 300
69 gagcacggga caggtactca acacctggca ggccagctgg atcctcagaa ctttgggacg 360
70 cacggagagg gggagaacat caccggggct ccctggctgg agaggcggaa tcagtcccg 420
71 ggggggtctgc atacacttgt tgcaggatga actccacctc tcagcacgga atgcacactt 480
72 ctctccactt ctggaaccgc agcacctacg gacagcacgg caacgccact gagtcccttg 540
73 gcaaaggcta ccccgacggg ggatgctacg agcaactctt cgtctcccg gagggtgttcg 600
74 tgactctggg ggtcataagc ttgctggaga acattctggt gatcgtggca atagccaaga 660
75 acaagaatct gcactacccc atgtactttt tcactctgtg cctggctgtg gccgatatgc 720
76 tgggtgagcgt ttccaacggg tcagagacca tcgtcatcac cctggtgaac agtacggata 780
77 cggacgcgca gaggtttcac gtgaatattg ataatgtcat tgactcgggtg atctgtagct 840
78 ccttgctcgc ctcgatttgc agcctgctct caattgcagt ggacaggtag tttactatct 900
79 tttatgcctt ccagtaccat aacatcatga cggtgaggcg gggtgggagc atcatcagtt 960
80 gcactctggc ggcttgacg gtgtcaggca tcttggtcat catttactcg gacagtactg 1020
81 ctgtcatcat ctgctcatc accatgttct tcacctgct ggccctcatg gcttctctct 1080
82 acgtccacat gttcctcatg gccagactgc acatcaagag aatcgccgct cccccgggca 1140
83 ccggcaccat ccgccaaggg gccaacatga agggtgccat taccttgacc atactcattg 1200
84 gggctctcgt cgtctgctgg gctccattct tctccactt gatattctac atctcttgct 1260
85 cccagaatcc atactgtgtg tgcttcatgt ctcaacttaa cttgtacctc attctgatca 1320
86 tgtgtaactc catcatcgac cctctcatth atgcaactcc gagccaagag ctgaggaaaa 1380
87 ccttcaaaga gatcatctgt tgctatcctc tgggtggcct ttgtgacttg tctagcagat 1440
88 actagctggg gacagaggaa gtactaaaaa catgcaccag agacttcttc atcctcacac 1500
89 aacatgaact gtgtgcttgg acaacagctg cttcttcagt ataaggcagg agttgagaat 1560
90 atctgttgca caaattcaac tttatgatgt ttgatgtga aaaaaaaaat gcccaggctc 1620
91 tgtacattgc taatgtcatg ctacttttgg gctgtgcatt gttaatccat ttcgacgctg 1680
92 tagacacttt gaatttctag aaaagaaaaa agcttccatt aaaagcatat cagtgtttct 1740
93 tgttattcac gaggttttgg cactttgctt gctttaggaa acatagaaat catagaatca 1800
94 ttaactatgt agcctgataa gtaacttctt atattatact atatcacatg aaatgtgcag 1860
95 atttgaatgt agcatggggg gtggatattg aacaatagat acttggtcat taaaacaatc 1920
96 aactgaaatt ttaagtaata aaatgtgttc atttccctg ttgcagaaat aaaaaaaaaa 1980
97 aaaaaa 1985
100 <210> SEQ ID NO: 3
101 <211> LENGTH: 332
102 <212> TYPE: PRT
103 <213> ORGANISM: Feline MC4R protein Sequence
105 <400> SEQUENCE: 3
106 Met Asn Ser Thr His His His Gly Met His Thr Ser Leu His Phe Trp
107 1 5 10 15
109 Asn Arg Ser Thr Tyr Gly Pro His Ser Asn Ala Ser Glu Ser Leu Gly

```

## RAW SEQUENCE LISTING

DATE: 02/22/2002

PATENT APPLICATION: US/09/884,211A

TIME: 11:41:30

Input Set : A:\PC10743A.app

Output Set: N:\CRF3\02222002\I884211A.raw

```

110          20          25          30
112 Lys Gly Tyr Ser Asp Gly Gly Cys Tyr Glu Gln Leu Phe Val Ser Pro
113          35          40          45
115 Glu Val Phe Val Thr Leu Gly Val Ile Ser Leu Leu Glu Asn Ile Leu
116          50          55          60
118 Val Ile Val Ala Ile Ala Lys Asn Lys Asn Leu His Ser Pro Met Tyr
119          65          70          75          80
121 Phe Phe Ile Cys Ser Leu Ala Val Ala Asp Met Leu Val Ser Val Ser
122          85          90          95
124 Asn Gly Ser Glu Thr Ile Val Ile Thr Leu Leu Asn Ser Thr Asp Thr
125          100          105          110
127 Asp Ala Gln Ser Phe Thr Val Asn Ile Asp Asn Val Ile Asp Ser Val
128          115          120          125
130 Ile Cys Ser Ser Leu Leu Ala Ser Ile Cys Ser Leu Leu Ser Ile Ala
131          130          135          140
133 Val Asp Arg Tyr Phe Thr Ile Phe Tyr Ala Leu Gln Tyr His Asn Ile
134          145          150          155          160
136 Met Thr Val Arg Arg Val Gly Ile Ile Ile Ser Cys Ile Trp Ala Ala
137          165          170          175
139 Cys Thr Val Ser Gly Val Leu Phe Ile Ile Tyr Ser Asp Ser Ser Ala
140          180          185          190
142 Val Ile Ile Cys Leu Ile Thr Met Phe Phe Thr Met Leu Ala Leu Met
143          195          200          205
145 Ala Ser Leu Tyr Val His Met Phe Leu Met Ala Arg Leu His Ile Lys
146          210          215          220
148 Arg Ile Ala Val Leu Pro Gly Thr Gly Thr Ile Arg Gln Gly Ala Asn
149          225          230          235          240
151 Met Lys Gly Ala Ile Thr Leu Thr Ile Leu Ile Gly Val Phe Val Val
152          245          250          255
154 Cys Trp Ala Pro Phe Phe Leu His Leu Ile Phe Tyr Ile Ser Cys Pro
155          260          265          270
157 Gln Asn Pro Tyr Cys Val Cys Phe Met Ser His Phe Asn Leu Tyr Leu
158          275          280          285
160 Ile Leu Ile Met Cys Asn Ser Ile Ile Asp Pro Leu Ile Tyr Ala Leu
161          290          295          300
163 Arg Ser Gln Glu Leu Arg Lys Thr Phe Lys Glu Ile Ile Cys Cys Tyr
164          305          310          315          320
166 Pro Leu Gly Gly Leu Cys Asp Leu Ser Ser Arg Tyr
167          325          330
170 <210> SEQ ID NO: 4
171 <211> LENGTH: 332
172 <212> TYPE: PRT
173 <213> ORGANISM: Canine MC4R protein Sequence
175 <400> SEQUENCE: 4
176 Met Asn Ser Thr Leu Gln His Gly Met His Thr Ser Leu His Phe Trp
177          1          5          10          15
179 Asn Arg Ser Thr Tyr Gly Gln His Gly Asn Ala Thr Glu Ser Leu Gly
180          20          25          30
182 Lys Gly Tyr Pro Asp Gly Gly Cys Tyr Glu Gln Leu Phe Val Ser Pro

```

## RAW SEQUENCE LISTING

DATE: 02/22/2002

PATENT APPLICATION: US/09/884,211A

TIME: 11:41:30

Input Set : A:\PC10743A.app

Output Set: N:\CRF3\02222002\I884211A.raw

```

183          35          40          45
185 Glu Val Phe Val Thr Leu Gly Val Ile Ser Leu Leu Glu Asn Ile Leu
186          50          55          60
188 Val Ile Val Ala Ile Ala Lys Asn Lys Asn Leu His Ser Pro Met Tyr
189 65          70          75          80
191 Phe Phe Ile Cys Ser Leu Ala Val Ala Asp Met Leu Val Ser Val Ser
192          85          90          95
194 Asn Gly Ser Glu Thr Ile Val Ile Thr Leu Leu Asn Ser Thr Asp Thr
195 -----100-----105-----110-----
197 Asp Ala Gln Ser Phe Thr Val Asn Ile Asp Asn Val Ile Asp Ser Val
198          115          120          125
200 Ile Cys Ser Ser Leu Leu Ala Ser Ile Cys Ser Leu Leu Ser Ile Ala
201          130          135          140
203 Val Asp Arg Tyr Phe Thr Ile Phe Tyr Ala Leu Gln Tyr His Asn Ile
204 145          150          155          160
206 Met Thr Val Arg Arg Val Gly Ile Ile Ile Ser Cys Ile Trp Ala Ala
207          165          170          175
209 Cys Thr Val Ser Gly Ile Leu Phe Ile Ile Tyr Ser Asp Ser Thr Ala
210          180          185          190
212 Val Ile Ile Cys Leu Ile Thr Met Phe Phe Thr Met Leu Ala Leu Met
213          195          200          205
215 Ala Ser Leu Tyr Val His Met Phe Leu Met Ala Arg Leu His Ile Lys
216          210          215          220
218 Arg Ile Ala Val Leu Pro Gly Thr Gly Thr Ile Arg Gln Gly Ala Asn
219 225          230          235          240
221 Met Lys Gly Ala Ile Thr Leu Thr Ile Leu Ile Gly Val Phe Val Val
222          245          250          255
224 Cys Trp Ala Pro Phe Phe Leu His Leu Ile Phe Tyr Ile Ser Cys Pro
225          260          265          270
227 Gln Asn Pro Tyr Cys Val Cys Phe Met Ser His Phe Asn Leu Tyr Leu
228          275          280          285
230 Ile Leu Ile Met Cys Asn Ser Ile Ile Asp Pro Leu Ile Tyr Ala Leu
231          290          295          300
233 Arg Ser Gln Glu Leu Arg Lys Thr Phe Lys Glu Ile Ile Cys Cys Tyr
234 305          310          315          320
236 Pro Leu Gly Gly Leu Cys Asp Leu Ser Ser Arg Tyr
237          325          330
240 <210> SEQ ID NO: 5
241 <211> LENGTH: 6148
242 <212> TYPE: DNA
243 <213> ORGANISM: pcDNA3.1zeo/murine G-alpha 15
245 <400> SEQUENCE: 5
246 gacggatcgg gagatctccc gatccctat ggtcgactct cagtacaatc tgctctgatg 60
247 ccgcatagtt aagccagtat ctgctccctg cttgtgtgtt ggaggtcgct gagtagtgcg 120
248 cgagcaaaat ttaagctaca acaaggcaag gcttgaccga caattgcatg aagaatctgc 180
249 ttagggttag gcgttttgcg ctgcttcgcg atgtacgggc cagatatacg cgttgacatt 240
250 gattattgac tagttattaa tagtaatcaa ttacggggtc attagttcat agcccatata 300
251 tggagttccg cgttacataa cttacggtaa atggcccgcg tggctgaccg cccaacgacc 360
252 cccgcccatt gacgtcaata atgacgtatg ttcccatagt aacgccaata gggactttcc 420

```

## RAW SEQUENCE LISTING

DATE: 02/22/2002

PATENT APPLICATION: US/09/884,211A

TIME: 11:41:30

Input Set : A:\PC10743A.app

Output Set: N:\CRF3\02222002\I884211A.raw

```

253 attgacgtca atgggtggac tatttacggt aaactgcccc cttggcagta catcaagtgt 480
254 atcatatgcc aagtacgccc cctattgacg tcaatgacgg taaatggccc gcctggcatt 540
255 atgcccagta catgacctta tgggactttc ctacttggca gtacatctac gtattagtca 600
256 tcgctattac catggtgatg cggttttggc agtacatcaa tgggcgtgga tagcggtttg 660
257 actcacgggg atttccaagt ctccacccca ttgacgtcaa tgggagtttg ttttggcacc 720
258 aaaatcaacy ggactttcca aaatgtcgta acaactccgc cccattgacg caaatgggcy 780
259 gtaggcgtgt acgggtgggag gtctatataa gcagagctct ctggctaact agagaaccca 840
260 ctgcttactg gcttatcgaa attaatacga ctactatag ggagacccaa gctggctagc 900
261 gtttaaaactt aagcttgggt gtctgtgaag cgcccaccat ggcccggtcc ctgacttggg 960
262 gctgctgtcc ctggtgcctg acagaggagg agaagactgc cgccagaatc gaccaggaga 1020
263 tcaacaggat tttgttgaa cagaaaaaac aagagcgaga ggaattgaaa ctctgctgt 1080
264 tggggcctgg tgagagcggg aagagtacgt tcatcaagca gatgcgcac attcacgggtg 1140
265 tgggctactc ggaggaggac cgcagagcct tccggtctgt catctaccag aacatcttcg 1200
266 tctccatgca ggccatgata gatgcgatgg accggtctga gatcccttc agcaggcctg 1260
267 acagcaagca gcacgccagc ctagtgatga cccaggaccc ctataaagtg agcacattcg 1320
268 agaagccata tgcagtggcc atgcagtacc tgtggcgagg cgcgggcacc cgtgcatgct 1380
269 acgagcgaag gcgtgaattc caccttcttg actccgcggt gtattacctg tcacacctgg 1440
270 agcgcatatc agaggacagc tacatcccca ctgcgcaaga cgtgctgcgc agtcgcatgc 1500
271 ccaccacagg catcaatgag tactgttct ccgtgaagaa aaccaaactg cgcacgtgg 1560
272 atgttggtgg ccagagggtca gagcgtagga aatggattca ctgtttcgag aacgtgattg 1620
273 cctcatcta cctggcctcc ctgagcgagt atgaccagt cctagaggag aacgatcagg 1680
274 agaaccgat ggaggagagt ctgcgtctgt tcagcacgat cctagagctg cctgggttca 1740
275 agagcacctc ggtcatctc ttctcaaca agacggacat cctggaagat aagattcaca 1800
276 cctccacact ggccacatac ttcccagct tccagggacc ccggcgagac gcagaggccg 1860
277 ccaagagctt catcttggac atgtatgcgc gcgtgtacgc gagctgcgca gagccccagg 1920
278 acggtggcag gaaaggctcc cgcgcgcgc gcttcttcgc acaattcacc tgtgccacgg 1980
279 acacgcaaag cgtccgcagc gtgttcaagg acgtgcggga ctcggtgctg gcccggtacc 2040
280 tggacgagat caacctgctg tgacgcagat ctaaagccga attctgcaga tatccatcac 2100
281 actggcggcc gctcgagcat gcatctagag ggcccgttta aaccgcgtga tcagcctcga 2160
282 ctgtgccttc tagttgccag ccactgtttg tttgcccctc ccccggtcct tcttgacccc 2220
283 tggaaaggtg cactcccact gtcctttcct aataaaatga ggaaattgca tcgcatgtc 2280
284 tgagtagggt tcaattctatt ctgggggggt ggggtggggc ggacagcaag ggggaggatt 2340
285 ggaagacaa tagcaggcat gctggggatg cgggtgggctc tatggcttct gaggcgga 2400
286 gaaccagctg gggctctagg gggatatccc acgcgcctg tagcggcgca ttaagcgcg 2460
287 cgggtgtggt ggttacgcgc agcgtgaccg ctacacttgc cagcgcccta gcgcccgtc 2520
288 ctttcgcttt ctcccttcc ttctcgcga cgttcgcgg ctttcccgt caagctctaa 2580
289 atcggggcat ccctttaggg ttccgattta gtgctttac gcacctcgac ccaaaaaaac 2640
290 ttgattaggg tgatggttca cgtagtgggc catgcacctg atagacggtt tttgcacct 2700
291 tgacgttggg gtccacgttc tttaatagt gactcttgtt ccaaactgga acaacactca 2760
292 accctatctc ggtctattct tttgatttat aagggatttt ggggatttcg gcctattgg 2820
293 taaaaaatga gctgatttaa caaaaattta acgcgaatta attctgtgga atgtgtgtca 2880
294 gttagggtgt ggaaagtccc caggctcccc aggcaggcag aagtatgcaa agcatgcac 2940
295 tcaattagtc agcaaccagg tgtggaaagt cccaggctc cccagcaggc agaagtatgc 3000
296 aaagcatgca tctcaattag tcagcaacca tagtccgcgc cctaactccg cccatccgc 3060
297 ccctaactcc gccagttcc gccattctc cgcccattg ctgactaatt ttttttatt 3120
298 atgcagaggc cgaggccgc tctgctctg agctattcca gaagtatgga ggaggcttt 3180
299 ttggaggcct aggtttttgc aaaaagctcc cgggagcttg tatatccatt ttcggatctg 3240
300 atcagcacgt gttgacaatt aatcatcggc atagtatatc ggcatagtat aatacgacaa 3300
301 ggtgaggaaac taaaccatgg ccaagttgac cagtgcggtt ccggtgctca ccgcgcgcga 3360

```

VERIFICATION SUMMARY

DATE: 02/22/2002

PATENT APPLICATION: US/09/884,211A

TIME: 11:41:31

Input Set : A:\PC10743A.app

Output Set: N:\CRF3\02222002\I884211A.raw

L:11 M:270 C: Current Application Number differs, Replaced Current Application Number